

WHAT IS CLAIMED IS:

5 *JLR AB* 1. A tomographic image reading method for
extracting a comparison image corresponding to a
diagnostic image and displaying the images, said
diagnostic image being a slice image which is one of
10 first tomographic images, said comparison image
being a slice image which is one of second
tomographic images which are taken at the time
different from the time when the first tomographic
images are taken, body section being a slice plane
15 in the X-Y axial direction and body axis being in
the Z axial direction, said method comprising the
steps of:
 inputting said first tomographic images
 and said second tomographic images;
20 generating a first projection image from
 said first tomographic images and a second
 projection image from said second tomographic
 images;
 measuring shift amount between said first
25 projection image and said second projection image by
 searching said second projection image for the same
 area as a template, said template being generated
 from said first projection image such that said
 template includes an area in which a specific object
30 image exists;
 correcting the slice position according to
 said shift amount between said first projection
 image and said second projection image; and
 displaying said diagnostic image and said
35 comparison image at a corrected slice position to a
 monitor.

2. An image alignment method for
5 extracting a comparison image corresponding to a
diagnostic image and displaying the images, said
diagnostic image being a slice image which is one of
first tomographic images, said comparison image
being a slice image which is one of second
10 tomographic images which are taken at the time
different from the time when the first tomographic
images are taken, body section being a slice plane
in the X-Y axial direction and body axis being in
the Z axial direction, said method comprising the
15 steps of:
 inputting said first tomographic images
and said second tomographic images;
 aligning resolutions of said first
tomographic images and said second tomographic
20 images by scaling one or both of said tomographic
images when the resolutions of said first
tomographic images and said second tomographic
images are different;
 generating a first projection image from
25 said first tomographic images and a second
projection image from said second tomographic
images;
 measuring shift amount between said first
projection image and said second projection image by
30 searching said second projection image for the same
area as a template by performing pattern matching
while shifting said template by an interval, said
template being generated from said first projection
image such that said template includes an area in
35 which a specific object image exists;
 correcting the slice position according to
said shift amount between said first projection

image and said second projection image; and
displaying said diagnostic image and said
comparison image at a corrected slice position to a
monitor.

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3. The image alignment method as claimed
10 in claim 2, further comprising an adjusting step of
adjusting positions of said diagnostic image and
said comparison image which are displayed;

wherein a MIDI signal constructing method
is used for the adjusting step, said MIDI signal
15 constructing method comprising the steps of:

providing n different MIDI channels or
control numbers or combinations of them for a signal
 x which has $128 \times n$ stages in which n is a positive
integer;

20 assuming said MIDI channels or said
control numbers or said combinations as $p=1, 2, \dots$
 n ;

dividing said signal x into 128 parts
 $W(l) (1; 0 \leq l \leq 127)$ in ascending order and assigning p
25 which is equal to $r+1 (r; 0 \leq r < n)$ to said signal x
which is equal to $l \times n + r$;

constructing and sending a MIDI control
change message in which a control value is 1 by
using a MIDI channel or control number corresponding
30 to p .

35 4. An image alignment method for
extracting a comparison image corresponding to a
diagnostic image and displaying the images, said

diagnostic image being a slice image which is one of first tomographic images, said comparison image being a slice image which is one of second tomographic images which are taken at the time

5 different from the time when the first tomographic images are taken, body section being a slice plane in the X-Y axial direction and body axis being in the Z axial direction, said method comprising the steps of:

10 inputting said first tomographic images and said second tomographic images;

aligning resolutions of said first tomographic images and said second tomographic images by scaling one or both of said tomographic

15 images when the resolutions of said first tomographic images and said second tomographic images are different;

finding a reference position in the Y axial direction from each of said first tomographic

20 image and said second tomographic image and correcting shift in the Y axial direction on the basis of said reference position;

generating a first projection image of the X axial direction from said first tomographic images

25 and generating a second projection image of the X axial direction from said second tomographic images;

measuring shift amount between said first projection image and said second projection image by searching said second projection image for the same

30 area as a template by performing pattern matching while shifting said template by an interval, said template being generated from said first projection image such that said template includes an area in which a specific object image exists;

35 correcting the slice position according to said shift amount between said first projection image and said second projection image; and

displaying said diagnostic image and said comparison image at a corrected slice position to a monitor.

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5. An image alignment method for extracting a comparison image corresponding to a 10 diagnostic image and displaying the images, said diagnostic image being a slice image which is one of first tomographic images, said comparison image being a slice image which is one of second tomographic images which are taken at the time 15 different from the time when the first tomographic images are taken, body section being a slice plane in the X-Y axial direction and body axis being in the Z axial direction, said method comprising the steps of:

20 inputting said first tomographic images and said second tomographic images;

aligning resolutions of said first tomographic images and said second tomographic images by scaling one or both of said tomographic 25 images when the resolutions of said first tomographic images and said second tomographic images are different;

generating a first projection image of the X axial direction from said first tomographic images 30 and generating a second projection image of the X axial direction from said second tomographic images;

finding a reference position in the Y axial direction from each of said first projection image and said second projection image and 35 correcting shift in the Y axial direction on the basis of said reference position;

measuring shift amount between said first

projection image and said second projection image by searching said second projection image for the same area as a template by performing pattern matching while shifting said template by an interval, said 5 template being generated from said first projection image such that said template includes an area in which a specific object image exists;

correcting the slice position according to said shift amount between said first projection 10 image and said second projection image; and displaying said diagnostic image and said comparison image at a corrected slice position to a monitor.

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6. A slice image automatic alignment method for extracting a comparison image 20 corresponding to a diagnostic image, said diagnostic image being a slice image which is one of first tomographic images, said comparison image being a slice image which is one of second tomographic images which are taken at the time different from 25 the time when the first tomographic images are taken, body section being a slice plane in the X-Y axial direction and body axis being in the Z axial direction, said method comprising the steps of:
inputting said first tomographic images 30 and said second tomographic images;
aligning resolutions of said first tomographic images and said second tomographic images by scaling one or both of said tomographic images when the resolutions of said first 35 tomographic images and said second tomographic images are different;
generating a first projection image from

AX
COPY
SEARCHED
SERIALIZED
INDEXED
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RJ
said first tomographic images and a second projection image from said second tomographic images;

5 measuring shift amount between said first projection image and said second projection image by searching said second projection image for the same area as a template by performing pattern matching while shifting said template by an interval, said template being generated from said first projection
10 image such that said template includes an area in which a specific object image exists; and
correcting the slice position according to said shift amount between said first projection image and said second projection image.

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7. The slice image automatic alignment
20 method as claimed in claim 6, the step of generating projection images including the step of:
generating said projection image comprising pixel values obtained by adding pixel values of said tomographic images in the X or Y
25 axial direction or in any other direction.

30 8. The slice image automatic alignment method as claimed in claim 6, the step of generating projection images including the step of:
generating a two dimensional image sequence comprising pixel values obtained by adding
35 pixel values of said tomographic images in the X or Y axial direction or in any other direction; and
generating said projection image by

interpolating said two dimensional image sequence.

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9. The slice image automatic alignment method as claimed in claim 6, wherein said template is an area of 25% to 50% from the top end of said first projection image in the Z axial direction.

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15 10. A slice image automatic alignment method for extracting a comparison image corresponding to a diagnostic image, said diagnostic image being a slice image which is one of first tomographic images, said comparison image being a slice image which is one of second tomographic 20 images which are taken at the time different from the time when the first tomographic images are taken, body section being a slice plane in the X-Y axial direction and body axis being in the Z axial direction, said method comprising the steps of:

25 inputting said first tomographic images and said second tomographic images;

30 aligning resolutions of said first tomographic images and said second tomographic images by scaling one or both of said tomographic images when the resolutions of said first tomographic images and said second tomographic images are different;

35 finding a reference position in the Y axial direction from each of said first tomographic image and said second tomographic image and correcting shift in the Y axial direction on the basis of said reference position;

generating a first projection image of the X axial direction from said first tomographic images and generating a second projection image of the X axial direction from said second tomographic images;

5 measuring shift amount between said first projection image and said second projection image by searching said second projection image for the same area as a template by performing pattern matching while shifting said template by an interval, said
10 template being generated from said first projection image such that said template includes an area in which a specific object image exists; and
 correcting the slice position according to said shift amount between said first projection
15 image and said second projection image.

20 11. A slice image automatic alignment method for extracting a comparison image corresponding to a diagnostic image, said diagnostic image being a slice image which is one of first tomographic images, said comparison image being a
25 slice image which is one of second tomographic images which are taken at the time different from the time when the first tomographic images are taken, body section being a slice plane in the X-Y axial direction and body axis being in the Z axial
30 direction, said method comprising the steps of:
 inputting said first tomographic images and said second tomographic images;
 aligning resolutions of said first tomographic images and said second tomographic
35 images by scaling one or both of said tomographic images when the resolutions of said first tomographic images and said second tomographic

images are different;

generating a first projection image of the X axial direction from said first tomographic images and generating a second projection image of the X

5 axial direction from said second tomographic images;

finding a reference position in the Y axial direction from each of said first projection image and said second projection image and

correcting shift in the Y axial direction on the

10 basis of said reference position;

measuring shift amount between said first projection image and said second projection image by searching said second projection image for the same area as a template by performing pattern matching

15 while shifting said template by an interval, said template being generated from said first projection image such that said template includes an area in which a specific object image exists; and

20 correcting the slice position according to said shift amount between said first projection image and said second projection image.

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12. The slice image automatic alignment method as claimed in claim 10, the step of generating projection images including the step of:

generating a two dimensional image

30 sequence comprising pixel values obtained by adding pixel values of said tomographic images in the X axial direction; and

generating said projection image by interpolating said two dimensional image sequence.

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13. The slice image automatic alignment method as claimed in claim 10, the step of finding said reference position and correcting shift including the steps of:

5 extracting a bed area as said reference position from said first tomographic image and said second tomographic image or said first projection image and said second projection image;

10 correcting shift in the Y axial direction on the basis of the bed surface, said Y axial direction being perpendicular to said bed surface.

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14. The slice image automatic alignment method as claimed in claim 10, the step of finding said reference position and correcting shift including the steps of:

20 finding a body part which contacts the bed as said reference position from said first tomographic image and said second tomographic image or said first projection image and said second projection image;

25 correcting shift in the Y axial direction on the basis of said part, said Y axial direction being perpendicular to said part.

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15. The slice image automatic alignment method as claimed in claim 10, the step of finding said reference position and correcting shift including the steps of:

35 finding a backbone part as said reference

position from said first tomographic image and said second tomographic image or said first projection image and said second projection image;

5 correcting shift in the Y axial direction on the basis of said backbone part, said Y axial direction being perpendicular to said backbone part.

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16. The slice image automatic alignment method as claimed in claim 6, the step of generating projection images including the step of generating said projection image in which weight is assigned to 15 a specific observation object by setting a window level and a window width.

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17. The slice image automatic alignment method as claimed in claim 10, the step of generating projection images including the step of generating said projection image in which weight is 25 assigned to a specific observation object by setting a window level and a window width.

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18. The slice image automatic alignment method as claimed in claim 6, the step of generating projection images including the step of generating said projection image in which only a part including 35 a distinctive part is projected.

Subj P

19. The slice image automatic alignment method as claimed in claim 10, the step of generating projection images including the step of generating said projection image in which only a part including a distinctive part is projected.

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20. The slice image automatic alignment method as claimed in claim 6, the step of measuring said shift amount including the steps of: generating a plurality of templates; performing template matching on said second projection image by said plurality of templates; and measuring shift amount between said first projection image and said second projection image from a plurality of reference points.

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21. The slice image automatic alignment method as claimed in claim 10, the step of measuring said shift amount including the steps of: generating a plurality of templates; performing template matching on said second projection image by said plurality of templates; and measuring shift amount between said first projection image and said second projection image from a plurality of reference points.

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22. The slice image automatic alignment method as claimed in claim 10, wherein said template 5 is an area of 25% to 50% from the top end of said first projection image in the Z axial direction.

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23. The slice image automatic alignment method as claimed in claim 11, wherein said template is an area of 25% to 50% from the top end of said first projection image in the Z axial direction.

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24. A tomographic image reading apparatus 20 for extracting a comparison image corresponding to a diagnostic image and displaying the images, said diagnostic image being a slice image which is one of first tomographic images, said comparison image being a slice image which is one of second

25 tomographic images which are taken at the time different from the time when the first tomographic images are taken, body section being a slice plane in the X-Y axial direction and body axis being in the Z axial direction, said apparatus comprising:

30 inputting means for inputting said first tomographic images and said second tomographic images;

35 projection image generation means for generating a first projection image from said first tomographic images and a second projection image from said second tomographic images;

template generation means for generating a

template from said first projection image such that said template includes an area in which a specific object image exists;

5 matching means for measuring shift amount between said first projection image and said second projection image by searching said second projection image for the same area as said template;

10 slice position correcting means for correcting the slice position according to said shift amount between said first projection image and said second projection image; and

15 displaying means for displaying said diagnostic image and said comparison image at a corrected slice position to a monitor.

25. An image alignment apparatus for
20 extracting a comparison image corresponding to a diagnostic image and displaying the images, said diagnostic image being a slice image which is one of first tomographic images, said comparison image being a slice image which is one of second

25 tomographic images which are taken at the time different from the time when the first tomographic images are taken, body section being a slice plane in the X-Y axial direction and body axis being in the Z axial direction, said apparatus comprising:

30 inputting means for inputting said first tomographic images and said second tomographic images;

35 resolution aligning means for aligning resolutions of said first tomographic images and said second tomographic images by scaling one or both of said tomographic images when the resolutions of said first tomographic images and said second

tomographic images are different;

projection image generation means for generating a first projection image from said first tomographic images and a second projection image 5 from said second tomographic images;

template generation means for generating a template from said first projection image such that said template includes an area in which a specific object image exists;

10 matching means for measuring shift amount between said first projection image and said second projection image by searching said second projection image for the same area as said template by performing pattern matching while shifting said template by an interval;

15 slice position correcting means for correcting the slice position according to said shift amount between said first projection image and said second projection image; and

20 displaying means for displaying said diagnostic image and said comparison image at a corrected slice position to a monitor.

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26. An image alignment apparatus for extracting a comparison image corresponding to a diagnostic image and displaying the images, said 30 diagnostic image being a slice image which is one of first tomographic images, said comparison image being a slice image which is one of second tomographic images which are taken at the time different from the time when the first tomographic 35 images are taken, body section being a slice plane in the X-Y axial direction and body axis being in the Z axial direction, said apparatus comprising:

inputting means for inputting said first tomographic images and said second tomographic images;

5 resolution aligning means for aligning resolutions of said first tomographic images and said second tomographic images by scaling one or both of said tomographic images when the resolutions of said first tomographic images and said second tomographic images are different;

10 reference position recognition means for finding a reference position in the Y axial direction from each of said first tomographic image and said second tomographic image

15 shift correcting means for correcting shift in the Y axial direction on the basis of said reference position;

20 projection image generation means for generating a first projection image of the X axial direction from said first tomographic images and generating a second projection image of the X axial direction from said second tomographic images;

25 template generation means for generating a template from said first projection image such that said template includes an area in which a specific object image exists;

30 matching means for measuring shift amount between said first projection image and said second projection image by searching said second projection image for the same area as said template by performing pattern matching while shifting said template by an interval;

35 slice position correcting means for correcting the slice position according to said shift amount between said first projection image and said second projection image; and

displaying means for displaying said diagnostic image and said comparison image at a

corrected slice \ position to a monitor.

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27. An image alignment apparatus for extracting a comparison image corresponding to a diagnostic image and displaying the images, said diagnostic image being a slice image which is one of 10 first tomographic images, said comparison image being a slice image which is one of second tomographic images which are taken at the time different from the time when the first tomographic images are taken, body section being a slice plane 15 in the X-Y axial direction and body axis being in the Z axial direction, said apparatus comprising:
inputting means for inputting said first tomographic images and said second tomographic images;
20 resolution aligning means for aligning resolutions of said first tomographic images and said second tomographic images by scaling one or both of said tomographic images when the resolutions of said first tomographic images and said second tomographic images are different;
25 projection image generation means for generating a first projection image of the X axial direction from said first tomographic images and generating a second projection image of the X axial 30 direction from said second tomographic images;
reference position recognition means for finding a reference position in the Y axial direction from each of said first projection image and said second projection image;
35 shift correcting means for correcting shift in the Y axial direction on the basis of said reference position.

template generation means for generating a template from said first projection image such that said template includes an area in which a specific object image exists;

5 matching means for measuring shift amount between said first projection image and said second projection image by searching said second projection image for the same area as said template by performing pattern matching while shifting said

10 template by an interval;

slice position correcting means for correcting the slice position according to said shift amount between said first projection image and said second projection image; and

15 displaying means for displaying said diagnostic image and said comparison image at a corrected slice position to a monitor.

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28. A slice image automatic alignment apparatus for extracting a comparison image corresponding to a diagnostic image, said diagnostic image being a slice image which is one of first tomographic images, said comparison image being a slice image which is one of second tomographic images which are taken at the time different from the time when the first tomographic images are taken, body section being a slice plane in the X-Y axial direction and body axis being in the Z axial direction, said apparatus comprising:

30 inputting means for inputting said first tomographic images and said second tomographic images;

35 resolution aligning means for aligning resolutions of said first tomographic images and

said second tomographic images by scaling one or both of said tomographic images when the resolutions of said first tomographic images and said second tomographic images are different;

5 projection image generation means for generating a first projection image from said first tomographic images and a second projection image from said second tomographic images;

10 template generation means for generating a template from said first projection image such that said template includes an area in which a specific object image exists;

15 matching means for measuring shift amount between said first projection image and said second projection image by searching said second projection image for the same area as said template by performing pattern matching while shifting said template by an interval; and

20 slice position correcting means for correcting the slice position according to said shift amount between said first projection image and said second projection image.

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29. A slice image automatic alignment apparatus for extracting a comparison image corresponding to a diagnostic image, said diagnostic image being a slice image which is one of first tomographic images, said comparison image being a slice image which is one of second tomographic images which are taken at the time different from the time when the first tomographic images are taken, body section being a slice plane in the X-Y axial direction and body axis being in the Z axial direction, said apparatus comprising:

inputting means for inputting said first tomographic images and said second tomographic images;

resolution aligning means for aligning 5 resolutions of said first tomographic images and said second tomographic images by scaling one or both of said tomographic images when the resolutions of said first tomographic images and said second tomographic images are different;

10 reference position recognition means for finding a reference position in the Y axial direction from each of said first tomographic image and said second tomographic image;

shift correcting means for correcting 15 shift in the Y axial direction on the basis of said reference position;

projection image generation means for generating a first projection image of the X axial direction from said first tomographic images and 20 generating a second projection image of the X axial direction from said second tomographic images;

template generation means for generating a template from said first projection image such that said template includes an area in which a specific 25 object image exists;

matching means for measuring shift amount between said first projection image and said second projection image by searching said second projection image for the same area as said template by 30 performing pattern matching while shifting said template by an interval; and

slice position correcting means for correcting the slice position according to said shift amount between said first projection image and 35 said second projection image.

30. A slice image automatic alignment apparatus for extracting a comparison image corresponding to a diagnostic image, said diagnostic 5 image being a slice image which is one of first tomographic images, said comparison image being a slice image which is one of second tomographic images which are taken at the time different from the time when the first tomographic images are taken, 10 body section being a slice plane in the X-Y axial direction and body axis being in the Z axial direction, said apparatus comprising:

inputting means for inputting said first tomographic images and said second tomographic 15 images;

resolution aligning means for aligning resolutions of said first tomographic images and said second tomographic images by scaling one or both of said tomographic images when the resolutions 20 of said first tomographic images and said second tomographic images are different;

projection image generation means for generating a first projection image of the X axial direction from said first tomographic images and 25 generating a second projection image of the X axial direction from said second tomographic images;

reference position recognition means for finding a reference position in the Y axial direction from each of said first projection image 30 and said second projection image;

shift correcting means for correcting shift in the Y axial direction on the basis of said reference position;

template generation means for generating a 35 template from said first projection image such that said template includes an area in which a specific object image exists;

matching means for measuring shift amount between said first projection image and said second projection image by searching said second projection image for the same area as said template by

5 performing pattern matching while shifting said template by an interval; and

slice position correcting means for correcting the slice position according to said shift amount between said first projection image and

10 said second projection image.

15 *sub* 31. A computer readable medium storing program code for causing a computer to extract a comparison image corresponding to a diagnostic image and to display the images, said diagnostic image being a slice image which is one of first

20 tomographic images, said comparison image being a slice image which is one of second tomographic images which are taken at the time different from the time when the first tomographic images are taken, body section being a slice plane in the X-Y axial

25 direction and body axis being in the Z axial direction, said computer readable medium comprising:

program code means for inputting said first tomographic images and said second tomographic images;

30 program code means for generating a first projection image from said first tomographic images and a second projection image from said second tomographic images;

35 program code means for measuring shift amount between said first projection image and said second projection image by searching said second projection image for the same area as a template,

said template being generated from said first projection image such that said template includes an area in which a specific object image exists;

 program code means for correcting the 5 slice position according to said shift amount between said first projection image and said second projection image; and

 program code means for displaying said 10 diagnostic image and said comparison image at a corrected slice position to a monitor.

15 32. A computer readable medium storing program code for causing a computer to extract a comparison image corresponding to a diagnostic image and to display the images, said diagnostic image being a slice image which is one of first 20 tomographic images, said comparison image being a slice image which is one of second tomographic images which are taken at the time different from the time when the first tomographic images are taken, body section being a slice plane in the X-Y axial 25 direction and body axis being in the Z axial direction, said computer readable medium comprising:

 program code means for inputting said first tomographic images and said second tomographic images;

30 program code means for aligning resolutions of said first tomographic images and said second tomographic images by scaling one or both of said tomographic images when the resolutions of said first tomographic images and said second 35 tomographic images are different;

 program code means for generating a first projection image from said first tomographic images

and a second projection image from said second tomographic images;

5 program code means for measuring shift amount between said first projection image and said second projection image by searching said second projection image for the same area as a template by performing pattern matching while shifting said template by an interval, said template being generated from said first projection image such that 10 said template includes an area in which a specific object image exists;

15 program code means for correcting the slice position according to said shift amount between said first projection image and said second projection image; and

15 program code means for displaying said diagnostic image and said comparison image at a corrected slice position to a monitor.

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33. The computer readable medium as claimed in claim 32, further comprising adjusting 25 program code means for adjusting positions of said diagnostic image and said comparison image which are displayed;

30 wherein a MIDI signal constructing program code means is used for adjusting program code means, said MIDI signal constructing program code means:

35 program code means for providing n different MIDI channels or control numbers or combinations of them for a signal x which has $128 \times n$ stages in which n is a positive integer;

35 program code means for assuming said MIDI channels or said control numbers or said combinations as $p=1, 2, \dots, n$;

5 program code means for dividing said signal x into 128 parts $W(l)(1; 0 \leq l \leq 127)$ in ascending order and assigning p which is equal to $r+1$ ($r; 0 \leq r < n$) to said signal x which is equal to $l \times n + r$;

10 program code means for constructing and sending a MIDI control change message in which a control value is 1 by using a MIDI channel or control number corresponding to p .

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34. A computer readable medium storing program code for causing a computer to extract a comparison image corresponding to a diagnostic image, said diagnostic image being a slice image which is one of first tomographic images, said comparison image being a slice image which is one of second tomographic images which are taken at the time different from the time when the first tomographic images are taken, body section being a slice plane in the X-Y axial direction and body axis being in the Z axial direction, said computer readable medium comprising:

20 program code means for inputting said first tomographic images and said second tomographic images;

25 program code means for aligning resolutions of said first tomographic images and said second tomographic images by scaling one or both of said tomographic images when the resolutions of said first tomographic images and said second tomographic images are different;

30 program code means for generating a first projection image from said first tomographic images and a second projection image from said second

tomographic images;

5 program code means for measuring shift amount between said first projection image and said second projection image by searching said second projection image for the same area as a template by performing pattern matching while shifting said template by an interval, said template being generated from said first projection image such that said template includes an area in which a specific

10 object image exists; and

program code means for correcting the slice position according to said shift amount between said first projection image and said second projection image.

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20 35. The computer readable medium as claimed in claim 34, said program code means for generating said projection images comprising:

25 program code means for generating said projection image comprising pixel values obtained by adding pixel values of said tomographic images in the X or Y axial direction or in any other direction.

30 36. The computer readable medium as claimed in claim 34, said program code means for generating said projection images comprising:

35 program code means for generating a two dimensional image sequence comprising pixel values obtained by adding pixel values of said tomographic images in the X or Y axial direction or in any other direction; and

generating said projection image by
interpolating said two dimensional image sequence.

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37. The computer readable medium as
claimed in claim 34, wherein said template is an
area of 25% to 50% from the top end of said first
10 projection image in the Z axial direction.

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38. A computer readable medium storing
program code for causing a computer to extract a
comparison image corresponding to a diagnostic image,
said diagnostic image being a slice image which is
one of first tomographic images, said comparison
20 image being a slice image which is one of second
tomographic images which are taken at the time
different from the time when the first tomographic
images are taken, body section being a slice plane
in the X-Y axial direction and body axis being in
25 the Z axial direction, said computer readable medium
comprising:

program code means for inputting said
first tomographic images and said second tomographic
images;

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program code means for aligning
resolutions of said first tomographic images and
said second tomographic images by scaling one or
both of said tomographic images when the resolutions
of said first tomographic images and said second
35 tomographic images are different;

program code means for finding a reference
position in the Y axial direction from each of said

first tomographic image and said second tomographic image and correcting shift in the Y axial direction on the basis of said reference position;

5 program code means for generating a first projection image of the X axial direction from said first tomographic images and generating a second projection image of the X axial direction from said second tomographic images;

10 program code means for measuring shift amount between said first projection image and said second projection image by searching said second projection image for the same area as a template by performing pattern matching while shifting said template by an interval, said template being generated from said first projection image such that said template includes an area in which a specific object image exists; and

15 program code means for correcting the slice position according to said shift amount 20 between said first projection image and said second projection image.

25 39. A computer readable medium storing program code for causing a computer to extract a comparison image corresponding to a diagnostic image, said diagnostic image being a slice image which is 30 one of first tomographic images, said comparison image being a slice image which is one of second tomographic images which are taken at the time different from the time when the first tomographic images are taken, body section being a slice plane 35 in the X-Y axial direction and body axis being in the Z axial direction, said computer readable medium comprising:

program code means for inputting said first tomographic images and said second tomographic images;

5 program code means for aligning resolutions of said first tomographic images and said second tomographic images by scaling one or both of said tomographic images when the resolutions of said first tomographic images and said second tomographic images are different;

10 program code means for generating a first projection image of the X axial direction from said first tomographic images and generating a second projection image of the X axial direction from said second tomographic images;

15 program code means for finding a reference position in the Y axial direction from each of said first projection image and said second projection image and correcting shift in the Y axial direction on the basis of said reference position;

20 program code means for measuring shift amount between said first projection image and said second projection image by searching said second projection image for the same area as a template by performing pattern matching while shifting said

25 template by an interval, said template being generated from said first projection image such that said template includes an area in which a specific object image exists; and

30 program code means for correcting the slice position according to said shift amount between said first projection image and said second projection image.

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40. The computer readable medium as

claimed in claim 38, said program code means for generating said projection images comprising:

5 program code means for generating a two dimensional image sequence comprising pixel values obtained by adding pixel values of said tomographic images in the X axial direction; and

10 program code means for generating said projection image by interpolating said two dimensional image sequence.

10

15 41. The computer readable medium as claimed in claim 38, said program code means for finding said reference position and correcting shift comprising:

20 program code means for extracting a bed area as said reference position from said first tomographic image and said second tomographic image or said first projection image and said second projection image;

25 program code means for correcting shift in the Y axial direction on the basis of the bed surface, said Y axial direction being perpendicular to said bed surface.

30

42. The computer readable medium as claimed in claim 38, said program code means for finding said reference position and correcting shift comprising:

35 program code means for finding a body part which contacts the bed as said reference position from said first tomographic image and said second

tomographic image or said first projection image and said second projection image;

program code means for correcting shift in the Y axial direction on the basis of said part,

5 said Y axial direction being perpendicular to said part.

10

43. The computer readable medium as claimed in claim 38, said program code means for finding said reference position and correcting shift comprising:

15 program code means for finding a backbone part as said reference position from said first tomographic image and said second tomographic image or said first projection image and said second projection image;

20 program code means for correcting shift in the Y axial direction on the basis of said backbone part, said Y axial direction being perpendicular to said backbone part.

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44. The computer readable medium as claimed in claim 34, said program code means for 30 generating said projection images comprising program code means for generating said projection image in which weight is assigned to a specific observation object by setting a window level and a window width.

35

45. The computer readable medium as
claimed in claim 38, said program code means for
generating said projection images comprising program
code means for generating said projection image in
5 which weight is assigned to a specific observation
object by setting a window level and a window width.

10

46. The computer readable medium as
claimed in claim 34, said program code means for
generating said projection images comprising program
code means for generating said projection image in
15 which only a part including a distinctive part is
projected.

20

47. The computer readable medium as
claimed in claim 38, said program code means for
generating said projection images comprising program
code means for generating said projection image in
25 which only a part including a distinctive part is
projected.

30

48. The computer readable medium as
claimed in claim 34, said program code means for
35 measuring said shift amount comprising:
program code means for generating a
plurality of templates;

program code means for performing template matching on said second projection image by said plurality of templates; and

5 program code means for measuring shift amount between said first projection image and said second projection image from a plurality of reference point.

10

49. The computer readable medium as claimed in claim 38, said program code means for measuring said shift amount comprising:

15 program code means for generating a plurality of templates;

program code means for performing template matching on said second projection image by said plurality of templates; and

20 program code means for measuring shift amount between said first projection image and said second projection image from a plurality of reference point.

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